

# RT<sup>2</sup> Profiler™ PCR Array:

## Human Diabetes

### Catalog Number

PAHS-023A

PAHS-023C

PAHS-023D

PAHS-023E

PAHS-023F

PAHS-023G

### For Real-Time Instruments:

ABI Standard Blocks; Bio-Rad iCycler, MyiQ, and (MJ Research) Chromo 4 and Stratagene Mx3005p, Mx3000p

ABI 7500 and 7900HT FAST 96-Well Blocks, ABI StepOnePlus

Bio-Rad (MJ Research) Opticon and Opticon 2, Stratagene Mx4000

ABI 7900HT 384-Well Block

Roche LightCycler 480 96-well Block

Roche LightCycler 480 384-well Block

### Description

The Human Diabetes RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 genes related to the onset, development, and progression of diabetes. They include genes that contribute to obesity, insulin resistance, the early onset of diabetes, and complications from diabetes mellitus. These genes are grouped into six functional categories: receptors, transporters & channels; nuclear receptors; metabolic enzymes; secreted factors; signal transduction proteins; and transcription factors. Many of the genes included have a tissue-specific or tissue-biased expression pattern which can also be affected by different pathophysiological states. This array can be used to study models of obesity and diabetes, to screen for therapeutics and their targets, and to profile the effect of various epidemiological and environmental factors on gene expression in various tissues or cell lines. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to diabetes with this array.

### Functional Gene Groupings

**Receptors, Transporters, and Channels:** ABCC8, ADRB3, AQP2, CCR2, CD28, CEACAM1, CTLA4, GCGR, GLP1R, ICAM1, IL4R, INSR, NSF, RAB4A, SELL (LECAM-1), SLC2A4 (GLUT4), SNAP23, SNAP25, STX4, STXBP1, STXBP2, TNFRSF1A, VAMP3, VAPA.

**Nuclear Receptors:** PPARA, PPARG.

**Metabolic Enzymes:** ACE, ACLY, ENPP1, FBP1, G6PC, G6PD, GCK, GPD1, GSK3B, HMOX1, IDE, ME1, NOS3, PARP1 (ADPRT1), PRKAA1, PRKAG2, PRKCB1, PYGL.

**Secreted Factors:** AGT, CCL5 (Rantes), GCG, IFNG, IL6, IL10, IL12B, INS, RETN, TGFB1, TNF, VEGFA.

**Signal Transduction:** AKT2, DUSP4, IGFBP5, IKBKB (IKKbeta), INPPL1 (SHIP2), IRS1, IRS2, MAPK8 (JNK1), MAPK14 (p38 MAPK), PIK3C2B, PIK3CD, PIK3R1, PTPN1 (PTP-1B), TRIB3 (SKIP3).

**Transcription Factors:** CEBPA, FOXC2, FOXP3, HNF4A, PDX1 (IPF1), NEUROD1, NFKB1, NRF1, PPARGC1, PPARGC1B, SREBF1, TCF2 (HNF1b), TITF1.

### Storage Conditions

Please check the kit components immediately after you receive this package. We are only responsible for missing items reported within two (2) business days of receipt.

**Storage Conditions:** PCR Arrays are shipped at ambient temperature. Keep plates at -20 °C for long-term storage.

## Product Specification Sheet

**NOTE:** Be sure that you have the correct PCR Array format for your instrument before starting the experiment.

### References

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10. Makita Y, Moczulski DK, Bochenski J, Smiles AM, Warram JH, Krolewski AS. Methylenetetrahydrofolate reductase gene polymorphism and susceptibility to diabetic nephropathy in type 1 diabetes. *Am J Kidney Dis.* 2003 Jun; **41** (6): 1189-94.
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13. Conarello SL, Li Z, Ronan J, Roy RS, Zhu L, Jiang G, Liu F, Woods J, Zycband E, Moller DE, Thornberry NA, Zhang BB. Mice lacking dipeptidyl peptidase IV are protected against obesity and insulin resistance. *Proc Natl Acad Sci U S A.* 2003 May 27; **100** (11): 6825-30.
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## Product Specification Sheet

### Array Layout: Human Diabetes PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABCC8	ACE	ACLY	ADRB3	AGT	AKT2	AQP2	CCL5	CCR2	CD28	CEACAM1	CEBPA
B	CTLA4	DUSP4	ENPP1	FBP1	FOXC2	FOXG1B	FOXP3	G6PC	G6PD	GCG	GCGR	GCK
C	GLP1R	GPD1	GSK3B	HMOX1	HNF4A	ICAM1	IDE	IFNG	IGFBP5	IKBKB	IL10	IL12B
D	IL4R	IL6	INPPL1	INS	INSR	PDX1	IRS1	IRS2	MAPK14	MAPK8	ME1	NEUROD1
E	NFKB1	NOS3	NRF1	NSF	PARP1	PIK3C2B	PIK3CD	PIK3R1	PPARA	PPARG	PPARGC1A	PPARGC1B
F	PRKAA1	PRKAG2	PRKCB1	PTPN1	PYGL	RAB4A	RETN	SELL	SLC2A4	SNAP23	SNAP25	SREBF1
G	STX4	STXBP1	STXBP2	TCF2	TGFB1	TITF1	TNF	TNFRSF1A	TRIB3	VAMP3	VAPA	VEGFA
H	B2M	HPRT1	RPL13A	GAPDH	ACTB	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

### Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Hs.54470	NM_000352	ABCC8	ATP-binding cassette, sub-family C (CFTR/MRP), member 8
A02	Hs.298469	NM_152831	ACE	Angiotensin I converting enzyme (peptidyl-dipeptidase A) 1
A03	Hs.387567	NM_001096	ACLY	ATP citrate lyase
A04	Hs.2549	NM_000025	ADRB3	Adrenergic, beta-3-, receptor
A05	Hs.19383	NM_000029	AGT	Angiotensinogen (serpin peptidase inhibitor, clade A, member 8)
A06	Hs.631535	NM_001626	AKT2	V-akt murine thymoma viral oncogene homolog 2
A07	Hs.130730	NM_000486	AQP2	Aquaporin 2 (collecting duct)
A08	Hs.514821	NM_002985	CCL5	Chemokine (C-C motif) ligand 5
A09	Hs.644637	NM_000648	CCR2	Chemokine (C-C motif) receptor 2
A10	Hs.591629	NM_006139	CD28	CD28 molecule
A11	Hs.512682	NM_001712	CEACAM1	Carcinoembryonic antigen-related cell adhesion molecule 1 (biliary glycoprotein)
A12	Hs.76171	NM_004364	CEBPA	CCAAT/enhancer binding protein (C/EBP), alpha
B01	Hs.247824	NM_005214	CTLA4	Cytotoxic T-lymphocyte-associated protein 4
B02	Hs.417962	NM_057158	DUSP4	Dual specificity phosphatase 4
B03	Hs.527295	NM_006208	ENPP1	Ectonucleotide pyrophosphatase/phosphodiesterase 1
B04	Hs.494496	NM_000507	FBP1	Fructose-1,6-bisphosphatase 1
B05	Hs.436448	NM_005251	FOXC2	Forkhead box C2 (MFH-1, mesenchyme forkhead 1)
B06	Hs.632336	NM_005249	FOXG1B	Forkhead box G1B
B07	Hs.247700	NM_014009	FOXP3	Forkhead box P3
B08	Hs.212293	NM_000151	G6PC	Glucose-6-phosphatase, catalytic subunit
B09	Hs.461047	NM_000402	G6PD	Glucose-6-phosphate dehydrogenase
B10	Hs.516494	NM_002054	GCG	Glucagon
B11	Hs.208	NM_000160	GCGR	Glucagon receptor
B12	Hs.1270	NM_000162	GCK	Glucokinase (hexokinase 4, maturity onset diabetes of the young 2)
C01	Hs.389103	NM_002062	GLP1R	Glucagon-like peptide 1 receptor
C02	Hs.524418	NM_005276	GPD1	Glycerol-3-phosphate dehydrogenase 1 (soluble)
C03	Hs.445733	NM_002093	GSK3B	Glycogen synthase kinase 3 beta
C04	Hs.517581	NM_002133	HMOX1	Heme oxygenase (decycling) 1
C05	Hs.116462	NM_178849	HNF4A	Hepatocyte nuclear factor 4, alpha
C06	Hs.643447	NM_000201	ICAM1	Intercellular adhesion molecule 1 (CD54), human rhinovirus receptor
C07	Hs.500546	NM_004969	IDE	Insulin-degrading enzyme
C08	Hs.856	NM_000619	IFNG	Interferon, gamma
C09	Hs.635441	NM_000599	IGFBP5	Insulin-like growth factor binding protein 5
C10	Hs.413513	NM_001556	IKBKB	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
C11	Hs.193717	NM_000572	IL10	Interleukin 10
C12	Hs.674	NM_002187	IL12B	Interleukin 12B (natural killer cell stimulatory factor 2, cytotoxic lymphocyte maturation)
D01	Hs.513457	NM_000418	IL4R	Interleukin 4 receptor
D02	Hs.512234	NM_000600	IL6	Interleukin 6 (interferon, beta 2)
D03	Hs.523875	NM_001567	INPPL1	Inositol polyphosphate phosphatase-like 1
D04	Hs.89832	NM_000207	INS	Insulin
D05	Hs.465744	NM_000208	INSR	Insulin receptor

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Position	UniGene	GenBank	Symbol	Description
D06	Hs.32938	NM_000209	PDX1	Pancreatic and duodenal homeobox 1
D07	Hs.471508	NM_005544	IRS1	Insulin receptor substrate 1
D08	Hs.442344	NM_003749	IRS2	Insulin receptor substrate 2
D09	Hs.588289	NM_001315	MAPK14	Mitogen-activated protein kinase 14
D10	Hs.138211	NM_002750	MAPK8	Mitogen-activated protein kinase 8
D11	Hs.21160	NM_002395	ME1	Malic enzyme 1, NADP(+)-dependent, cytosolic
D12	Hs.72981	NM_002500	NEUROD1	Neurogenic differentiation 1
E01	Hs.431926	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (p105)
E02	Hs.653170	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
E03	Hs.298069	NM_005011	NRF1	Nuclear respiratory factor 1
E04	Hs.431279	NM_006178	NSF	N-ethylmaleimide-sensitive factor
E05	Hs.177766	NM_001618	PARP1	Poly (ADP-ribose) polymerase family, member 1
E06	Hs.497487	NM_002646	PIK3C2B	Phosphoinositide-3-kinase, class 2, beta polypeptide
E07	Hs.518451	NM_005026	PIK3CD	Phosphoinositide-3-kinase, catalytic, delta polypeptide
E08	Hs.132225	NM_181504	PIK3R1	Phosphoinositide-3-kinase, regulatory subunit 1 (p85 alpha)
E09	Hs.103110	NM_005036	PPARA	Peroxisome proliferative activated receptor, alpha
E10	Hs.162646	NM_015869	PPARG	Peroxisome proliferator-activated receptor gamma
E11	Hs.527078	NM_013261	PPARGC1A	Peroxisome proliferator-activated receptor gamma, coactivator 1 alpha
E12	Hs.591261	NM_133263	PPARGC1B	Peroxisome proliferator-activated receptor gamma, coactivator 1 beta
F01	Hs.43322	NM_006251	PRKAA1	Protein kinase, AMP-activated, alpha 1 catalytic subunit
F02	Hs.549162	NM_016203	PRKAG2	Protein kinase, AMP-activated, gamma 2 non-catalytic subunit
F03	Hs.460355	NM_002738	PRKCB1	Protein kinase C, beta 1
F04	Hs.417549	NM_002827	PTPN1	Protein tyrosine phosphatase, non-receptor type 1
F05	Hs.282417	NM_002863	PYGL	Phosphorylase, glycogen; liver (Hers disease, glycogen storage disease type VI)
F06	Hs.296169	NM_004578	RAB4A	RAB4A, member RAS oncogene family
F07	Hs.283091	NM_020415	RETN	Resistin
F08	Hs.82848	NM_000655	SELL	Selectin L (lymphocyte adhesion molecule 1)
F09	Hs.380691	NM_001042	SLC2A4	Solute carrier family 2 (facilitated glucose transporter), member 4
F10	Hs.511149	NM_003825	SNAP23	Synaptosomal-associated protein, 23kDa
F11	Hs.167317	NM_003081	SNAP25	Synaptosomal-associated protein, 25kDa
F12	Hs.592123	NM_004176	SREBF1	Sterol regulatory element binding transcription factor 1
G01	Hs.83734	NM_004604	STX4	Syntaxin 4
G02	Hs.288229	NM_003165	STXBP1	Syntaxin binding protein 1
G03	Hs.534352	NM_006949	STXBP2	Syntaxin binding protein 2
G04	Hs.191144	NM_006481	TCF2	Transcription factor 2, hepatic; LF-B3; variant hepatic nuclear factor
G05	Hs.645227	NM_000660	TGFB1	Transforming growth factor, beta 1
G06	Hs.94367	NM_003317	TITF1	Thyroid transcription factor 1
G07	Hs.241570	NM_000594	TNF	Tumor necrosis factor (TNF superfamily, member 2)
G08	Hs.279594	NM_001065	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A
G09	Hs.516826	NM_021158	TRIB3	Tribbles homolog 3 (Drosophila)
G10	Hs.66708	NM_004781	VAMP3	Vesicle-associated membrane protein 3 (cellubrevin)
G11	Hs.653207	NM_194434	VAPA	VAMP (vesicle-associated membrane protein)-associated protein A, 33kDa
G12	Hs.73793	NM_003376	VEGFA	Vascular endothelial growth factor A
H01	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H02	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1 (Lesch-Nyhan syndrome)
H03	Hs.546356	NM_012423	RPL13A	Ribosomal protein L13a
H04	Hs.544577	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H05	Hs.520640	NM_001101	ACTB	Actin, beta
H06	N/A	SA_00105	HGDC	Human Genomic DNA Contamination
H07	N/A	SA_00104	RTC	Reverse Transcription Control
H08	N/A	SA_00104	RTC	Reverse Transcription Control
H09	N/A	SA_00104	RTC	Reverse Transcription Control
H10	N/A	SA_00103	PPC	Positive PCR Control
H11	N/A	SA_00103	PPC	Positive PCR Control
H12	N/A	SA_00103	PPC	Positive PCR Control